

ABSTRACT OF THE DISCLOSURE

5 Signal light (at a wavelength λ_s), entered an input terminal from an optical transmission line, inputs a combiner through an optical amplifier. The combiner combines the output light of the optical amplifier and the probe light (at a wavelength λ_p) from a probe light source and applies them to an EA modulator. The EA modulator superimposes a waveform of the signal light on the probe light. An optical BPF transmits only the component of the probe wavelength λ_p in the output light of the EA modulator. A photodetector converts the output light of the optical BPF into an electric signal, and an amplifier electrically amplifies the output of the photodetector. A BPF extracts the clock component of the input signal light from the output of the amplifier and applies it to a driver. The driver pulsatively drives the probe light source at the same frequency with that of the clock signal from the BPF and adjusts its pulse phase so as to synchronize with the current pulse from the EA modulator. A laser light source generates a probe light pulse according to a driving signal from the driver.

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